

CLAIMS

What is claimed is:

1. An isolated polynucleotide comprising:

- (a) a nucleotide sequence encoding a polypeptide having lipoxygenase activity, wherein the amino acid sequence of the polypeptide and the amino acid sequence of SEQ ID NO:2, 4, 6, 8,10, 12, 14, 16, or 18 have at least 80% sequence identity based on the Clustal alignment method, or
- (b) the complement of the nucleotide sequence, wherein the complement and the nucleotide sequence contain the same number of nucleotides and are 100% complementary.

2. The polynucleotide of Claim 1, wherein the amino acid sequence of the polypeptide and the amino acid sequence of SEQ ID NO:2, 4, 6, 8,10, 12, 14, 16, or 18 have at least 85% identity based on the Clustal alignment method.

3. The polynucleotide of Claim 1, wherein the amino acid sequence of the polypeptide and the amino acid sequence of SEQ ID NO:2, 4, 6, 8,10, 12, 14, 16, or 18 have at least 90% identity based on the Clustal alignment method.

4. The polynucleotide of Claim 1, wherein the amino acid sequence of the polypeptide and the amino acid sequence of SEQ ID NO:2, 4, 6, 8,10, 12, 14, 16, or 18 have at least 95% identity based on the Clustal alignment method.

5. The polynucleotide of Claim 1, wherein the amino acid sequence of the polypeptide comprises the amino acid sequence of SEQ ID NO:2, 4, 6, 8,10, 12, 14, 16, or 18.

6. The polynucleotide of Claim 1 wherein the nucleotide sequence comprises the nucleotide sequence of SEQ ID NO:1, 3, 5, 7, 9, 11, 13, 15, or 17.

7. A vector comprising the polynucleotide of Claim 1.

8. A recombinant DNA construct comprising the polynucleotide of Claim 1 operably linked to a regulatory sequence.

9. A method for transforming a cell, comprising transforming a cell with the polynucleotide of Claim 1.

10. A cell comprising the recombinant DNA construct of Claim 8.

11. A method for producing a plant comprising transforming a plant cell with the polynucleotide of Claim 1 and regenerating a plant from the transformed plant cell.

12. A plant comprising the recombinant DNA construct of Claim 8.

13. A seed comprising the recombinant DNA construct of Claim 8.

14. An isolated polynucleotide comprising a first nucleotide sequence, wherein the first nucleotide sequence contains at least 30 nucleotides, and wherein the first nucleotide sequence is comprised by another polynucleotide, wherein the other polynucleotide includes:

- (a) a second nucleotide sequence, wherein the second nucleotide sequence encodes a polypeptide having lipoxygenase activity, wherein the amino acid sequence of the polypeptide and the amino acid sequence of SEQ ID NO:2, 4, 6, 8,10, 12, 14, 16, or 18 having at least 80% sequence identity based on the Clustal alignment method, or
- (b) the complement of the second nucleotide sequence, wherein the complement and the second nucleotide sequence contain the same number of nucleotides and are 100% complementary.

15. An isolated polypeptide having lipoxygenase activity, wherein the amino acid sequence of the polypeptide and the amino acid sequence of SEQ ID NO:2, 4, 6, 8,10, 12, 14, 16, or 18 have at least 80% identity based on the Clustal alignment method.

16. The polypeptide of Claim 15, wherein the amino acid sequence of the polypeptide and the amino acid sequence of SEQ ID NO:2, 4, 6, 8,10, 12, 14, 16, or 18 have at least 85% identity based on the Clustal alignment method.

17. The polypeptide of Claim 15, wherein the amino acid sequence of the polypeptide and the amino acid sequence of SEQ ID NO:2, 4, 6, 8,10, 12, 14, 16, or 18 have at least 90% identity based on the Clustal alignment method.

18. The polypeptide of Claim 15, wherein the amino acid sequence of the polypeptide and the amino acid sequence of SEQ ID NO:2, 4, 6, 8,10, 12, 14, 16, or 18 have at least 95% identity based on the Clustal alignment method.

19. The polypeptide of Claim 15, wherein the amino acid sequence of the polypeptide comprises the amino acid sequence of SEQ ID NO:2, 4, 6, 8,10, 12, 14, 16, or 18.

20. A method for isolating a polypeptide encoded by the polynucleotide of Claim 1 comprising isolating the polypeptide from a cell containing a recombinant DNA construct comprising the polynucleotide operably linked to a regulatory sequence.